WE learn from the *British Medical Journal* that Dr. Crace Calvert, of Manchester, having been requested to carbolise a quantity of charpie for the use of the ambulances at the seat of war, found that charpie was unsuitable for the purpose ; and after trying several textures, finally hit upon oakum as the most excellent. The oakum is first soaked in Burgundy pitch, and then rendered antiseptic by the addition of carbolic acid. This application has been a good deal used at the Manchester Infirmary, and with good results.

A NEW undertaking of interest to the philosopher is the Arequipa Railway in Peru just opened for traffic. It is a great engineering work, carried out with English capital by American enterprise, and it penetrates the western chain of the Cordillera of the Andes to reach the table lands of the interior, Arequipa, the terminus, being 7,800 feet above the level of the sea. Now at this elevation the rarefaction of the air is such that the ordinary workmen could not be employed, the suffering being in some cases intense. The works were, however, pushed on with vigour, and Mr. Meiggs imported above 16,000 labourers for his works, and for this purpose chiefly Aymara Indians from Bolivia. Mr. David Forbes, F.R.S., has, in his memoirs on the Aymaras in the Journal of the Ethnological Society, described the abnormal structure of the chests of these people, and it is astonishing to see them employed in a task which most effectually insures their subjugation. To foreign troops it was always difficult to scale these regions, but now the railway does the work, though to soldiers and passengers the journey is not always without discomfort.

THE Bunya-Bunya (*Araucaria Bidwilli*), a native of the northern district of New South Wales, is of considerable interest, as being the only hereditary personal property possessed by the natives, who greedily devour the fruit, either raw, or roasted and made into cakes. This fruit is only plentiful every third year ; and at the proper season the aborigines assemble in considerable numbers for the purpose of obtaining it. Each tribe has its own set of trees, and each family its particular individuals among them ; and these are handed down from generation to generation. The right of ownership is almost universally respected ; but occasional depredations occur, when a fight ensues, the sympathies of the bystanders going with the lawful proprietor.

WE learn from the *Grocer* that experiments recently carried on in India have proved that coffee pulp will yield, upon distillation, 9 per cent. of its own weight of spirit, equal in strength to Scotch whisky. Nothing is said as to the flavour of this spirit in its raw state, but it appears to realise on the spot a price nearly equivalent to 4*s*. 6*d*. per gallon.

AT the end of January, no date named, a shock of earthquake was felt in the Sanjak of Kartal, in Northern Asia Minor, which lasted several seconds and did slight damage.

A LARGE and valuable deposit of limestone has been discovered by Mr. Read in the Sonthal Pergunnas, in Bengal, in the Banslo River. There is good communication with Calcutta by water or railway.

SOME fair pearls have been brought down to Durban, in Natal, from the River Vaal. They were found in mussels.

NATURAL history and dancing and the Police. Such is our announcement from Madras. In consequence of a fatal case the Commissioner of Police has ordered that the dancing girls shall not dance in the Hindu temples with cobra snakes thrown round their necks. This will cause great disappointment to the pious votary and the interested amateur. It will tend, however, to lessen the reverence for the cobra, and may bring his tribe into greater danger of repression.

IMAGINATION IN SCIENCE

PROFESSOR Tyndall will eventually have much to answer for. He has lent his authority to the admission of imagination in the pursuit of science, and there is every prospect that people whose imaginative faculty is stronger than their habit of observation will give us all plenty to do. We shall not only have to question nature, but we shall have to eliminate imagination, and thus have two battles to fight for truth. Our medical friends have not always walked in the ways of rigid observation and induction, but if any one desires to see how easy it is for the imaginative faculty alone to tell us all we require to know, we commend to his perusal the *Mobile Daily Register*, of Dec. 18th, 1870, in which there is a communication from Dr. Cochrane on the subject of yellow fever, well written, and interesting, and giving what may be called an account of yellow fever from the imaginative side. The author justifies his position by the example of European names, tells us candidly that he states only " what he believes but does not know," and then takes his flight into the unknown. He imagines "the yellow fever poison to be composed of living germs in innumerable number, living organisms of inconceivable minuteness, which eat, and drink, and multiply their generations under the sun, just as other living creatures do with which we happen to be familiar." He connects his speculations in these matters with similar speculations about "contagia" and disease "germs" which are well known on this side of the Atlantic, and without paying any attention to facts regarding yellow fever and other diseases which are left untouched by any extant doctrine, he tells us truly that "the visions of modern science are more wonderful than the visions of Eastern fable." This may be true, and the visions themselves may be true ; but, for people who feel that they must walk over the earth in search of truth, nutriment of this kind is by no means sufficient for mental sustenance.

We have no desire to undervalue the importance of the imaginative faculty in scientific pursuits ; but papers such as the one before us raise some very important primary questions. Are we to live, scientifically, in the same way as alchemists and astrologers did in the Middle Ages ? and are we to ignore all that Bacon and Newton have done for us ? If it be true that there is no royal road to knowledge on the firm earth, it is certain there is no such road through the air. Let us use the imaginative faculty by all means ; but, in doing so, let us take our stand on the firm ground of the known before we venture ourselves into the unknown.

THE ROYAL SOCIETY'S SOIRÉE

WE are indebted for the following account of the most interesting objects exhibited at the Royal Society's *soirée* on Saturday evening last to the *Standard*, from which paper it is abridged.

In the foremost ranks of notable attractions were the heliotype process of printing photographic plates for plates for book illustration, by Messrs. Edwards and Kidd ; the solar eclipse photographs, and the twelve-inch equatorial telescope, with its photographic feed apparatus (Mr. Browning's), by which they were obtained by Lord Lindsay ; the musical vibration figures shown in Mr. Spottiswoode's new apparatus ; the electrical experiments of Mr. Varley ; Commander Harvey's sea torpedo (made by Vavasseur) ; Dr. Norris's soap-bubble experiments ; Mr. Haviland's fine maps of the geographical distribution of cancer and heart disease (very recently published by Mr. Keith Johnston) ; the gold-hardening process, by Mr. Roberts of the Mint ; and Mr. Francis Galton's pantagraph and resultant plates for the publications of the Meteorological Office.

The soap-bubble experiments, performed with great adeptness by Dr. Norris, were intended to illustrate the physical principles concerned in the formation of rouleaux in the blood and in the passage of the corpuscles *de toute pièce* through the walls of the minute blood-vessels, without rupture of the latter, as observed by Waller in 1846 and Cohnheim in 1867. A film of soap solution was taken by a metal ring of a foot or more in diameter,

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and upon it a soap-bubble blown from a pipe was thrown; the bubble was caught by the film, and held suspended midway or along the equator of the thin hollow sphere. The bubbles were then forced through and drawn through without rupture of the films. An orange was dropped, and glass rods and other solid objects, with wetted surfaces, were passed in like manner without rupture of the films.

The three experiments by Mr. Cromwell F. Varley were exhibited for the first time in public. Two of them were in illustration of some investigations into the nature of electric discharges through gaseous media, described in a paper read before the society in January. In a Geissler's tube, containing highly rarefied hydrogen, a small filament of talc was hung by a single horizontal fibre of silk. Two aluminium rings, separated an inch and a quarter, formed the electrodes inside the vacuum. This tube was placed longitudinally with and over the horizontal poles of a large very powerful iron horse-shoe electro-magnet, made of a bar four inches in diameter and four feet in length, and wrapped with nearly 2 cwt. of thick copper-wire. A small induction coil sent electric discharges from one ring to the other, producing a brilliant blue light around the negative pole, the positive pole being dark. The moment the magnet was charged, by means of thirty cells of Grove's nitric acid battery, each cell containing twenty square inches of platinum foil, the electric luminosity in the tube, which beforehand was diffused, gathered up into an arch extending one and a half inches beyond each ring, forming altogether a well-defined arch about four inches in length. This luminous arch follows exactly the course of those magnetic rays which traverse through the negative pole. By shifting the tube the piece of talc can be brought at pleasure in or out of this luminous arch. Neither the electric action nor the magnet *per se* produce any motion upon the talc; but when the tube is so placed that the luminous arch strikes against the talc the talc is repelled as much as 30° from the perpendicular. The electric current is passing simply from one ring to the other inside the tube, but the luminous arch in question where it strikes the talc is on the other side of the ring and where no electricity is flowing.

Mr. Spottiswoode's musical vibration experiment consisted of the visible representation of the forms actually assumed by a musical string when producing a note or its harmonies. To show this it is required that the string should be kept in a perfectly uniform state of vibration. This was very ingeniously accomplished by means of tuning forks kept in vibration by electro-magnets, these forming their own breaks in cups of mercury.

The singular action of nuclei in promoting crystallisation has long been known, but recent experiments by Mr. Chandler Roberts, chemist of the Mint, have imparted additional interest to the subject. Minute traces of lead, antimony, bismuth, or arsenic, render the alloy of gold and copper known as "standard gold" crystalline, intensely brittle, and totally unfit for the purpose of coining. This remarkable effect is produced even when the amount of obnoxious metal does not exceed the $\frac{1}{1900}$ part of the mass of standard gold. Mr. Roberts exhibited beautiful specimens of crystalline standard gold and illustrations of the process of toughening brittle gold by means of chlorine recently introduced in the Mint, the adoption of which has afforded a satisfactory solution to a question of considerable importance connected with the manufacture of coins.

SCIENTIFIC SERIALS

THE *Mittheilungen der naturforschenden Gesellschaft in Bern* for 1869, published last year, contain many important papers.—M. E. Schär publishes a valuable contribution to the knowledge of some cyanogen compounds, and a memoir of considerable length on peroxide of hydrogen, and its relations to ferments.—M. A. Gruner communicates a short but interesting paper on the luminosity of the so-called "touchwood," in which he details several experiments, and comes to the conclusion that ozone is to be regarded as the principal cause of the phenomenon.—In geology we find some valuable memoirs by M. C. von Fischer-Ooster, especially a paper on the Rhætic stage in the neighbourhood of Thun, which includes an account of the beds, and a list of the fossils occurring in them, with descriptions of some new species, and many figures. The same author also contributes several smaller papers on the occurrence of a Liassic zone between the chain of the Moleson and the Miremont in the Canton of Freiberg, on the narrow Flysch zone from the Hongrin towards Jaun, on the geological age of the so-called Taviglian̈a Sandstone, and on the stratigraphical conditions near the Küblisbad.—M. J. Bachmann publishes some remarks in opposition to M. Renevier's geological observations on the Alps of Central Switzerland compared with the Vaudoise Alps, and M. A. Rytz a notice on the erratic formations in the Kanderthal.—M. Theophil Studer notices the occurrence of Foraminifera in the Alpine chalks, detected by the examination of thin slices, and also describes a new Swiss form of the genus *Tropidonotus*, for which, however, he does not venture to propose a specific name.—Dr. R. Henzi reports upon the attempts made by him to cultivate *Saturnia Mylitta* and *S. yama maya*, and M. G. Hasler describes and figures an apparatus for giving telegraphic intimation of the height of water in reservoirs, &c.—The Proceedings of the society also contain short notices upon various subjects.

THE *Atti della R. Accademia delle Scienze di Torino* for the first six months of the year 1870 (vol. v. parts 3—7) contains numerous papers on various branches of science, but principally on subjects connected with physics. Of zoological memoirs we have a notice of some new and little-known species of birds collected on the voyage of the *Magenta* by MM. Giglioli and Salvadori, the new species being *Acridotheres leucocephalus* and *Leptoptila chlorauchenia*; a paper by Dr. Giglioli on the phosphorescence of the sea, with notices of the various animals observed by him to be luminous, and descriptions of two new species of the genus *Noctiluca* (*N. omogenea* and *N. pacifica*); descriptions of new species of birds by M. Salvadori, namely, *Saxicola allo-marginata* from the Sahara, *S. Brehmii* from Nubia and Abyssinia, *Brachypus urostictus* from the Philippines, and the type of a new genus allied to *Malacopteron*, *Homochlamys luscinia* (Finsch MS.) from the Philippines or China; and a critical revision of Antinori's descriptive catalogues of birds collected by him in North Central Africa.—M. Cavalli, in a memoir on a gunpowder uninjurious to cannon, maintains the superiority of large grains, especially if made spherical and more regular and hardened at the surface.—A new form of mercurial barometer is described by M. Faà di Bruno, and the barometric formula of Count Paolo de Saint-Robert is discussed by Prof. Dorna, who also presents what he calls a loghypsometrical table for use in applying the barometric formula worked out by him in the determination of altitudes.—Prof. Govi describes a new method of obtaining sensitive flames, consisting in the application of a wire net with meshes about one millim. square to an ordinary gas jet, and lighting the gas after its passage through the meshes. The same author also publishes a note on the influence of sonorous vibrations upon cold and ignited gas jets.—Prof. Boccardo notices the fall of an earthy shower at Genoa on the 14th February, 1870. He gives an analysis of the material, which consisted chiefly of sand with oxide of iron and carbonate of lime, and contained 6·611 per cent. of nitrogenous organic matter. Under the microscope, it was found to contain frustules of Diatomaceæ and fragments of other simple Algæ. No windstorm had occurred immediately before the fall of the shower, which the author considers to have probably come from Egypt.—Prof. Dorna has a note on the scientific importance of Soperga and the Sacra di San Michele to the Observatory of Turin, and upon their respective differences of level.—M. Richelmy communicates some notes on the construction and operation of toothed wheels.—In a paper on nitroglycerine, nitromannite, and pyroxyline, Prof. Sombrero vindicates his title to be regarded as the discoverer of the first of these compounds, and notices the properties and mode of preparation of the other two. M. L. F. Menabrea furnishes some explanations of his views on the principles of elasticity, which are disputed by MM. A. Parodi and G. Barsotti. M. Codazza describes an apparatus devised by him to act as an electrical indicator to give notice of the attainment of the maximum or minimum limits of temperature between which it is required to keep any substance. Prof. Denza describes an aurora borealis observed in Piedmont on the 5th April 1870.—Prof. Govi indicates that Thenevot was the inventor of the spirit-level with a bubble of air. The same author communicates a paper by Prof. Chiò on a barometric formula.—M. Gastaldi notices a collection of stone weapons and instruments from the neighbourhood of the Baltic, and also some ancient weapons and instruments of stone, bronze, or brass, from Egypt. Several of these are figured; one of them, a long, chisel-shaped, bronze instrument, is attached obliquely to a mallet-shaped handle, in such a manner as to serve as a small axe.—Prof. Luvini publishes a long paper on the adhesion between solids and liquids.—M. Genocchi notices some papers ascribed to A. Cauchy.—Prof. Dorna describes the instruments and methods employed at the Observatory of Turin for the measurement of time.—M. A.

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